UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,155	08/29/2001	Ravindra K. Shetty	H00-02102 (256.100US1)	6813

128 7590 09/30/2004		EXAMINER

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EXAMINER
HOLMES, MICHAEL B

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/942,155	SHETTY ET AL.
	Examiner	Art Unit	
	Michael B. Holmes	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _(3)_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _29 August 2001_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-72_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-4, 11, 19-22, 28, 35-38, 44, 51-53 & 57_ is/are rejected.

7) ☒ Claim(s) _6-10, 12-18, 23-27, 29-34, 39-43, 45-50, 54-56 and 58-72_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _29 August 2001_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _07012002/05242004_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

UNITED STATES PATENT AND TRADEMARK OFFICE

P.O. Box 1450, Alexandria, Virginia 22313-1450 – www.USPTO.GOV

Examiner's Detailed Office Action

1.   This Office Action is responsive to application **09/942,155**, filed **August 29, 2001**.

2.   **Claims 1-72** have been examined.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described** as set forth
> in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 1-4, 11, 19-22, 28, 35-38, 44, 51-53 & 57 are rejected under 35 U.S.C. 103(a) as

being unpatentable over

Agrafiotis et al. (USPN 6,421,612 B1) further in view of *Guiver et al.* (USPN 5,809,490).

Regarding claim 1. *Agrafiotis et al.* describes a computer-implemented method for supervised

artificial neural network machine learning (FIG. 8 & FIG. 11, C 15, L 49 to C 16, L 35), com-

prising: a storage device (FIG. 19, C 36, L 18-49); an output device (FIG. 19, C 36, L 18-38

& C 38, L 22-29); a processor programmed to repeatedly perform a method (C 5, L 12-19 &

C 17, L 51 to C 18, L 09); receiving data (FIG. 8 & FIG. 11, C 12, L 31-57); checking

dimensionality of the received data (FIG. 8 & FIG. 11, C 12, L 31-57); reducing the

dimensionality of the received data to enhance machine learning performance based on the

dimensionality (FIG. 8 & FIG. 11, C 15, L 49 to C 16, L 35); specifying the supervised neural

network architecture (FIG. 8 & FIG. 11, C 15, L 49 to C 16, L 35); initializing weights to

establish connection strengths between the received data and predicted values (FIG. 8 & FIG. 11,

C 15, L 49 to C 16, L 35, *typically training an artificial neural network refers to the process of*

setting or initializing the connection weights so that the artificial neural network produces a

desired output in response to particular inputs.); performing supervised machine learning using

the specified architecture, initialized weights, and the received data including the reduced

dimensionality to predict values (FIG. 8 & FIG. 11, C 15, L 49 to C 16, L 35 & C 17, L 41 to C

18, L 10); and revising the initialized weights of the network based on a normalized system error

threshold value to generate a learnt neural network having a reduced error in weight space. (FIG.

8 & FIG. 11, C 15, L 49 to C 16, L 35 & C 32, L 29) *Agrafiotis et al.* does not describe a sparse

data environment or analyzer. However, *Guiver et al.* describes sparse data environment (C 9,

L 10-16) and analyzer (C 1, L 13-25). It would have been obvious at the time the invention was

made to a person having ordinary skill in the art to which said subject matters to combine

Agrafiotis et al. with *Guiver et al.* because in a number of system modeling applications where

first principles, analytical, or expert knowledge about the actual structure of the system to be

modeled is lacking or inadequate, data driven analyzers may be applied in place of conventional

analyzers. These data driven analyzers may incorporate a number of models such as parametric

statistical models, non-parametric statistical models, clustering models, nearest neighbor models, regression methods, and engineered (artificial) neural networks. (C 1, L 13-21)

Regarding claim 2, 20, 36 & 53. data selected from the group consisting of static data (*Agrafiotis et al.*, C 6, L 66-67) and real-time data (*Guiver et al.*, C 11, L 18)

Regarding claim 3, 4, 21 & 37. reducing the dimensionality of the received data to enhance machine learning performance based on the dimensionality, further comprises: receiving data (*Agrafiotis et al.*, FIG. 8 & FIG. 11, C 12, L 31-57); checking dimensionality of the received data (*Agrafiotis et al.*, FIG. 8 & FIG. 11, C 12, L 31-57); and reducing the dimensionality of the received data to enhance machine learning performance based on the outcome of the checking. (*Agrafiotis et al.*, FIG. 8 & FIG. 11, C 15, L 49 to C 16, L 35)

Regarding claim 11, 28 & 44. The method of claim 2, wherein initializing the weights further comprises: initializing the weights using random weights. (*grafiotis et al.*, C 17, L 19-40)

5.   Claims 5, 22, 38, 52 & 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Agrafiotis et al.* (USPN 6,421,612 B1) further in view of *Guiver et al.* (USPN 5,809,490) further in view of *Delanoy* (USPN 5,793,888).

Regarding claim 5, 22, 38 & 57. reducing the dimensionality of the received data comprises; reducing the number of attributes in the received data using Principal Component Analysis.

(*Delanoy,* C 14, L 22-34) It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters to combine *Agrafiotis et al.* with *Guiver et al.* with *Delanoy* because there is a growing problem in that the vast image databases being accumulated today are overwhelming the capabilities of users to find particular images e.g., much of the data currently obtained from military and civilian sensors is recorded and never accessed because of the difficulty of searches. (*Delanoy,* C 1, L 27-32)

Regarding claim 52. The system of claim 51, further comprising: a database coupled to the receive module to receive and store data. (*Delanoy,* C 4, L 55-64) It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters to combine *Agrafiotis et al.* with *Guiver et al.* with *Delanoy* because there is a growing problem in that the vast image databases being accumulated today are overwhelming the capabilities of users to find particular images e.g., much of the data currently obtained from military and civilian sensors is recorded and never accessed because of the difficulty of searches. (*Delanoy,* C 1, L 27-32)

Claim Objection

5.   Claims 6-10, 12-18, 23-27, 29-34, 39-43, 45-50, 54-56 & 58-72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6.   The prior art made of record and (listed of form **PTO-892**) not relied upon is considered

pertinent to applicant's disclosure as follows. Applicant or applicant's representative is respect-

fully reminded that in process of patent prosecution i.e., amending of claims in response to a

rejection of claims set forth by the Examiner per Title 35 U.S.C. The patentable novelty must be

clearly shown in view of the state of the art disclosed by the references cited and any objections

made. Moreover, applicant or applicant's representative must clearly show how the amendments

avoid or overcome such references and objections. *See* **37 CFR § 1.111(c)**.

Correspondence Information

7.   Any inquiries concerning this communication or earlier communications from the

examiner should be directed to **Michael B. Holmes** who may be reached via telephone at

(703) 308-6280. The examiner can normally be reached Monday through Friday between

8:00 a.m. and 5:00 p.m. eastern standard time.

        If you need to send the Examiner, a facsimile transmission regarding After Final

issues, please send it to **(703) 746-7238**. If you need to send an Official facsimile trans-

mission, please send it to **(703) 746-7239**. If you would like to send a Non-Official (draft)

facsimile transmission the fax is **(703) 746-7240**. If any attempts to reach the examiner by

telephone are unsuccessful, the **Examiner's Supervisor, Anthony Knight,** may be reached

at **(703) 308-3179**.

Any response to this office action should be mailed too:

Director of Patents and Trademarks Washington, D.C. 20231. Hand-delivered

responses should be delivered to the Receptionist, located on the fourth floor of

Crystal Park II, 2121 Crystal Drive Arlington, Virginia.

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